DOCUMENT RESUME

ED 390 400 IR 055 747

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TITLE Cataloging Three-Dimensional Objects: A Study of Academic Health Science Libraries.
PUB DATE 15 Nov 95
NOTE 38p.; Masters Research Paper, Kent State University.
PUB TYPE Dissertations/Theses - Undetermined (040) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Libraries; Access to Information; *Cataloging; Higher Education; Information Storage; *Library Collections; Library Personnel; *Library Technical Processes; *Medical Libraries; Questionnaires; Subject Index Terms; Tables (Data)
IDENTIFIERS *Artifacts

ABSTRACT

This study examines a random sample of academic health sciences libraries across the United States to determine if these institutions have three-dimensional medical artifacts in their collections and how they organize and catalog these materials to provide access to them. A questionnaire was sent to heads of cataloging at 30 academic health sciences libraries (57% response rate) consisting of 16 multi-choice questions on the education and size of cataloging staff, the presence of three-dimensional medical artifacts, their storage, and whether they are cataloged. Specific questions focused on the use of bibliographic utilities for cataloging, the cataloging code used, and whether the objects are used for educational purposes. Results indicated that: (1) the majority (88%) of the libraries have three-dimensional medical artifacts in their collections; (2) the majority (60%) of the libraries catalog these items; (3) twice as many libraries relied on local code or practice as the basis for cataloging as opposed to those who relied on AACR2; (4) the majority (88%) use controlled subject headings, with half of them using MeSH and half using locally devised headings; (5) access points varied more widely than descriptive elements; and (6) smaller libraries were more likely to catalog three-dimensional materials than larger libraries. Seven tables provide information on cataloging, collection size, storage, and staff size. The cover and follow-up letters and the questionnaire are included in the appendix. (Contains 19 references.) (AEF)

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ED 390 400

Cataloging Three-Dimensional Objects: A Study of Academic Health Science Libraries

A Master's Research Paper submitted to the
Kent State University School of Library and Information Science
in partial fulfillment of the requirements
for the degree Master of Library Science

by

Jennifer L. Compton

November 15, 1994

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Master's Research Paper by

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B.A., John Carroll University, 1990

M.L.S., Kent State University, 1994

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I. Abstract

Many libraries include three-dimensional objects in their collections, some intentionally, and others accidentally, usually through donation. Academic health science libraries often receive donations of "old" medical equipment from retiring alumni. While some librarians may see this equipment as "junk," it can be a valuable research tool for historians and other researchers interested in the history of medicine. To be useful, however, it must be accessible. This study will survey a random sample of academic health sciences libraries across the United States to determine if these institutions have three-dimensional medical artifacts in their collections and how they organize and catalog these materials to provide access to them. While the study focuses on health science libraries, it will provide librarians from all types of libraries with ideas for organizing and providing access to three-dimensional objects in their collections.

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SECTION I. INTRODUCTION

STATEMENT OF THE PROBLEM

Many types of libraries have three-dimensional objects in their collections. School libraries often have models or kits, public libraries have toys and tools, and academic libraries have memorabilia and other gifts from alumni. Librarians have often shied away from these objects. They present unique problems for storage, circulation, and cataloging. It was not until the latest edition of AACR2 that a standardized code was available for the cataloging of three-dimensional objects, and not until even more recently that the audiovisual MARC format was adapted, allowing three-dimensional items to be cataloged onto OCLC, RLIN, and other databases using the MARC format.

Academic health science libraries often receive donations of medical equipment from alumni. This equipment is of interest to historians and others interested in the history of medicine and medical technology. However, librarians are sometimes unsure of what to do with these materials. Often, they are stored in boxes in basements, uncataloged, and inaccessible to researchers. Others catalog the materials using locally devised methods or AACR2's rules for cataloging three-dimensional realia. This study surveyed a random sample of academic health sciences libraries across the United States to determine if these institutions receive gifts of this nature and how they organize and catalog these materials to provide researchers access to them. It specifically focuses on the use of bibliographic databases such as OCLC and RLIN to catalog these materials and make them available to researchers all over the world.

These objects are valuable primary research sources. Without organization they cannot be accessed. While this study focuses on medical artifacts in collections, it provides all librarians with ideas for organizing and providing access to three-dimensional objects in their collections.

LIMITATIONS OF THIS STUDY

This research project focuses on academic health sciences libraries and medical artifacts. Because of the specialized nature of these institutions and these collections, the data received from them cannot be generalized to all types of libraries. Other types of libraries, however, can use the information and results for ideas on handling other types of three-dimensional materials in their own collections.

In addition, because of the small population of academic health sciences libraries, a small sample was taken and many of the resulting data numbers are small. These small numbers make some statistical measures less precise. This does not mean that useful conclusions are not possible, but simply that the conclusions are less precise than would be possible with larger numbers. In the future, a larger study would be useful, perhaps one that surveys the entire population of academic health sciences libraries.

DEFINITIONS OF TERMS

Academic libraries can be defined as "those of universities, university colleges, and all other institutions forming part of, or associated with, institutions of higher education."[1] For the purpose of this study, Academic Health Science Libraries are defined as those libraries affiliated with medical schools.

Artifacts are defined as "a group of 'artificial' entities, i.e. those which do not occur naturally, and which are 'concrete, e.g. chairs, automobiles."[2] For the purpose of this study, artifacts are limited to those used by health care professionals for the diagnosis and treatment of medical conditions.

Three-Dimensional objects can also be termed realia. These are "objects such as museum materials, dioramas, models and samples...".[3] Esther Bierbaum, in her study of three-dimensional objects in public library collections defines three-dimensional objects as

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[1]Harrod, Leonard Montague, comp., *The Librarians' Glossary of Terms used in Librarianship, Documentation, and the Book Crafts and Reference Book*, 4th rev. ed. Boulder, CO : Westview Press, 1977, p. 39.

[2]Ibid., p. 73.

[3]Ibid., p. 687.

"THINGS: 'realia,' created artifacts, models, and items from nature."[4] Again, for the purposes of this study, three-dimensional objects will be limited to those used by health care professionals for the diagnosis and treatment of medical conditions.

Staff size will be measured by the number of full time employees responsible for the cataloging and processing of library materials. Professional librarians hold a Masters Degree in Library Science from an ALA accredited School. Paraprofessionals hold a bachelor's degree from a four year college or University, and nonprofessionals do not meet either of these criteria.

AACR2 is the Anglo American Cataloging Rules, 2nd edition, the cataloging code devised by the British and American Library Associations. Local practice or codes are cataloging rules devised by an individual institution, not widely used or accepted by other institutions.

RESEARCH QUESTIONS

The questions that this study addresses are:

1) Do Academic Health Science Libraries have three-dimensional medical instruments and/or equipment in their collections?

2) Do Academic Health Science Libraries catalog three-dimensional medical instruments and/or equipment found in their collections?

3) If these libraries do catalog these items, what cataloging code do they use? Do they use AACR2, local codes or practice, or something else?

4) Are institutions using bibliographic utilities such as OCLC and RLIN for the cataloging of medical artifacts or are records created for local use only?

5) What descriptive elements and access points are included in the cataloging records of institutions that do catalog these materials?

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[4]Esther Green Bierbaum, " The Third Dimension: Dealing with Objects in Public Library Collections," *Public Library Quarterly* 6 (Fall, 1985) : 36.

6) What is the relationship between staff size and the cataloging of three-dimensional objects? Are larger institutions more likely to catalog these objects than smaller institutions?

SECTION II. LITERATURE REVIEW

With some very notable exceptions, the area of cataloging three-dimensional objects remains largely unexplored by library researchers. Not until AACR2 did there exist a standard framework for cataloging such items, and it was not until 1987 that the MARC audiovisual format was revised to be more compatible with object cataloging and chapter 10 of AACR2.[5] One author in particular wrote prolifically from the mid to late 1980's but since then the topic has not been prominent in the library or museum literature.

Museums have more experience managing object collections, but they lack the standardization that libraries have developed. Therefore, librarians can learn some techniques for three-dimensional cataloging from museum professionals, but cannot turn to the museum world for any kind of AACR2 equivalent. Bierbaum compares library and museum cataloging in her article, "Records and Access: Museum Registration and Library Cataloging." The article is a good introduction to the process of cataloging objects as undertaken by museums. Librarians can learn from the successes and mistakes of museum professionals. In her article she discusses differences in terminology between libraries and museums as well as the problems museums have with lack of consistency and lack of any controlled vocabulary subject thesauri. She concludes that librarians and museum professionals have much to learn from each other and that, especially, museum professionals can learn much from librarians, especially considering the more than two decades of computer automation that librarians have experienced.[6]

Samuel also compares library and museum cataloging in her article, "Documenting our heritage." She traces the joint history of library and museum cataloging, noting the inadequacies of current museum records and many of the similarities that museum and library cataloging share. She notes particularly that museum object cataloging and rare book cataloging share some attributes, a point that may be helpful to librarians new to object cataloging.[7] Like Bierbaum, Samuel points out that museums have failed to recognize that much of the work of standardization and "the technical aspects of gaining control of their collections have already been solved by the library community."[8]

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[5]Esther G. Bierbaum, "Beyond Print: Object Collections in Academic Libraries," *Collection Building* 10 (1989) : 9.

[6]Esther Green Bierbaum, "Records and Access: Museum Registration and Library Cataloging," *Cataloging & Classification Quarterly* 9 (1988) : 109.

[7]Evelyn K. Samuel, "Documenting our Heritage," *Library Trends* 37 (Fall 1988) : 149.

[8]Ibid., p. 144.

Another Bierbaum article, "MARC in Museums: Applicability of the Revised Visual Materials Format," is more pertinent to actual object cataloging for librarians. In this article, Bierbaum tests the applicability of the revised audiovisual MARC format for the cataloging of object collections. She notes that not until 1978 and the second edition of AACR2 did librarians even have a standardized code for the cataloging of three-dimensional objects. The lack of such a code before that time, however, did not keep librarians from collecting such objects, but it did keep any record of them out of the public catalog. With the publication of the second edition of AACR2, the 1987 fifteenth update to USMARC Format for Bibliographic Data, and the adaptation of the visual materials format, extensive object collections could be cataloged using the MARC format.[9] Museums, as noted earlier, lack a standardized cataloging code, and have resisted the possibility that the revised MARC format could offer them a standardized format for cataloging three-dimensional artifacts. Bierbaum's study challenged that assumption. Bierbaum mapped out the information cited as the minimum data requirement for museum records onto the MARC record, choosing fields appropriate for this information. Workforms were created for input into OCLC and librarians were asked to catalog a number of objects donated from the Iowa Historical Society. Bierbaum notes that they did not find the cataloging difficult.[10] She then tested the resulting paper records by distributing them to a sample of museum registrars for evaluation. Overall, the museum professionals were pleased with the results of the experiment.[11] Criticism seems to be centered around the inapplicability of MARC as a collection management tool, a problem often repeated by museum professionals, but not by librarians. Bierbaum's study can be extremely useful for librarians interested in cataloging objects, especially as it lists the MARC fields used. It also points out a number of concerns raised by museum professionals that librarians might want to consider and possibly address.

Stanley's article, "Documenting African Material Culture," also discusses the use of the MARC format in museums for object collections. Stanley specifically discusses the linking of museum and bibliographic (such as RLIN and OCLC) databases. This linkage is essential for collection management purposes. The project she describes adapted the MARC format to capture data on African sculptural objects. The project has been fairly successful and demonstrates the adaptability of the MARC format to object collections. Stanley writes: "Nothing in MARC inherently restricts it to bibliographic information; all

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[9]Esther Green Bierbaum, "MARC in Museums: Applicability of the Revised Visual Materials Format," *Information Technology and Libraries* 9 (December 1990) : 291.

[10]Ibid., p. 293.

[11]Ibid.

kinds of descriptive data can be transmitted by MARC even though the requirements of different kinds of material (e.g. manuscripts, photographs, objects) require different definitions and fields..."[12] Like Bierbaum, Stanley discusses the problems of consistency, nonstandardization, and idiosyncrasy in museum records. She notes that object cataloging is undergoing the same development as bibliographic cataloging did, going from standardized cataloging to standard data formats to authority control. Her article is an important one and offers a great deal of insight into the problems of object cataloging. The success of the project demonstrates that MARC is adaptable to object cataloging and provides librarians with some practical aspects of how this is done from a librarian's perspective.

Bierbaum has also conducted two studies specifically focusing on libraries and object cataloging. Her article, Beyond Print: Object Collections in Academic Libraries," reports on her study involving 180 college and university libraries. She specifically focuses on the question of whether "the academic collections continuum [is] extended from print, to AV, and then to 3D; and are the formats equally accessible bibliographically?"[13]

Bierbaum surveyed 180 randomly selected college and university libraries, asking them whether they collected objects, what type of objects they collected, how they were obtained, whether they cataloged these objects, and on what type of code their cataloging of such material was based.[14] In addition, Bierbaum explored the relationship of staff size and the management of object collections. Bierbaum's study is a good introductory study into the subject of three-dimensional object cataloging. She found that most academic and college libraries do have three-dimensional objects in their collections. She points out that one problem with her study was that she limited the inclusion of objects only to those physically housed within the library. From marginal notations in the responses, she discovered that in many cases objects were dispersed throughout the university community and housed in other areas, even if the library maintained responsibility for their cataloging. Her findings culminate in several helpful suggestions for academic librarians planning to integrate objects into her collections.[15] Her study is very comprehensive and a good starting point for the study of objects in library collections.

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[12]Janet L. Stanley, "Documenting African Material Culture," in *Africana Resources and Collections: Three Decades of Development and Achievement*, ed. Julian W. Witherell (Metuchen, N.J.: Scarecrow Press, 1989), p. 144.

[13]Esther G. Bierbaum, "Beyond Print: Object Collections in Academic Libraries," *Collection Building* 10 (1989) : 7.

[14]Ibid., p. 8.

[15]Ibid., p. 10.

Bierbaum also published a similar study of public libraries. Her article, "The Third Dimension: Dealing with Objects in Public Library Collections," details the results of this study. As in her other survey, a low response rate may have skewed her results, although this is not mentioned as a problem in her article. She found that public libraries include quite a variety of three-dimensional objects among their collections, ranging from toys and games to tools, live animals and art objects. As in the academic libraries, most of the objects were acquired as gifts, rather than purchased specifically for the collection. An interesting difference between this study and her study of academic libraries, is that fewer public libraries used AACR2 to catalog three-dimensional objects. 77% of academic libraries relied on AACR2 for such cataloging, while only 27% of public libraries did so. Public libraries were much more likely to rely on local code or practice. Some possible reasons for this discrepancy are the expertise of catalogers in academic institutions, the fact that academic libraries became automated earlier than public libraries, larger cataloging staff size of academic institutions, or a lag time in conducting the different components of the research project. (I.e., perhaps the public libraries were surveyed earlier than academic libraries and AACR2 had gained acceptance by the time academic libraries were surveyed.) Further study of these differences would be interesting, although Bierbaum does not suggest this possibility. It would also be interesting to duplicate these studies to see if any significant change has occurred since this survey was completed. Bierbaum doesn't discuss this difference between public and academic institutions, but does note that the reliance on local code is evidence of the lack of guidance in previous cataloging codes for dealing with nonprint materials. In addition, the fact that AACR2 was the second most cited code, indicates that this problem is being resolved with the inclusion of other types of media in AACR2.[16] Bierbaum does mention some possible areas for further research, including studies of the communicative value of three-dimensional objects and the attraction of these types of materials for the "marginally-enthusiastic patron."[17] Overall, her study is a good exploratory study of this topic and opens up some possibilities for further research.

Bierbaum also studied the teaching of cataloging three-dimensional objects by library schools to discover if a possible "print bias" was being passed down to the next generation of librarians. This study is presented in her article, "Teaching the Cataloging of Three-Dimensional Objects." This study specifically focuses on whether instruction in classification and cataloging by library school professors, includes consideration of

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[16]Esther Green Bierbaum, "The Third Dimension: Dealing with Objects in Public Library Collections," *Public Library Quarterly* 6 (Fall 1985) : 41.

[17]Ibid., p. 49.

nonprint materials, including objects. It also measures instructors' attitudes toward the teaching of object cataloging.[18] While Bierbaum did find that cataloging of nonprint materials, including three-dimensional objects, was taught to library school students fairly frequently, she also found evidence of some degree of print bias among library school faculty. This finding is of vital importance because, as Bierbaum points out, "It will be difficult for library school graduates who have experienced even unconscious nonprint bias to assume a leadership role in developing access to nonprint materials--in weaning public libraries from local practice cataloging, for example." Furthermore, she concludes, "As long as agencies such as libraries segregate certain classes of carriers of information from access files--and worse, from consideration in collections--interagency cooperation will suffer, and the information-seeking public will not be well served."[19]

This particular study by Bierbaum is especially important because it goes beyond what libraries are currently doing with regards to object cataloging. It allows us to look ahead to the future and to realize the important role that library school education plays in shaping future professional practice. For the most part, Bierbaum's studies are well done and fit together nicely. It will be important to follow-up on these studies as librarians become accustomed to the changing formats in which information is presented.

Art museums have often led the way in the quest for computerization of museum records. Generally such projects are fairly far removed from the scope of this study, and therefore will only be discussed briefly. Like Samuel, Stam notes the similarities between object cataloging and rare book cataloging, a comparison which may be of use to those faced with three-dimensional object cataloging.[20] She also notes the lack of standardization and guidance that has plagued the museum community. Her detailed historical account of the attempts to catalog art objects using computers, may be of interest to librarians, but the question continues to arise: why don't museum professionals take advantage of the experience librarians have in this field?

Other articles dealing with the computerization of art museum records include Scott's article, "Museum Data Bank Research Report: The Yogi and the Registrar. This article discusses the difficulties of cataloging and classifying art collections within museums. Allen's article, "The Museum Prototype Project: A View from the Library,"

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[18]Esther Green Bierbaum, "Teaching the Cataloging of Three-Dimensional Objects," *Journal of Education for Library and Information Science* 29 (Summer 1988) : 5.

[19]Ibid., p. 13.

[20]Deirdre C. Stam, "The Quest for a Code, or a Brief History of the Computerized Cataloging of Art Objects," *Art Documentation* (Spring 1989) : 7.

discusses a project establishing a forum to discuss issues relating to the computerization of art museum collections.[21]

The cataloging of objects seems to be a popular topic among library school students at the University of North Carolina at Chapel Hill. Benning, Eason, and Wessling all wrote Master's papers discussing the cataloging of three-dimensional objects. Benning and Eason both discuss the cataloging of a personal collection of historical optical toys. These papers were of some interest, especially because of the historic element involved which relates to the historical aspects of medical objects in academic collections. Both papers, however, were manuals on how to catalog these types of collections. The projects were interesting, but as many cataloging manuals are available, they are not very useful and are somewhat redundant. Wessling's paper on the indexing of insignia and patches was slightly more unique because it focused on indexing and cataloging, making it slightly more substantial.

Nothing has specifically been written about the cataloging of historical medical artifacts in academic libraries. This study will focus on this unique aspect of three-dimensional object cataloging.

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[21]Nancy S. Allen. "The Museum Prototype Project: A View from the Library." *Library Trends* 37 (Fall 1988) : 176.

SECTION III. Methodology

This study examines the various methods that libraries use to organize and provide access to three-dimensional objects. Academic health science libraries were chosen because they often receive gifts of historical medical artifacts from alumni. Many of these libraries include these artifacts as part of their historical collections, some even developing museums for their display. Historians specializing in the history of medicine are eager for information on these artifacts. The objects are primary resources for investigating the history of surgical techniques and developments, doctor/patient relationships, and the development of asepsis, among other topics. Currently, a pilot project is underway at the Cleveland Health Sciences Library, affiliated with Case Western Reserve University. This project, involving a consortium made up of seven academic health sciences libraries in the state of Ohio, will catalog these libraries' collections of medical artifacts onto OCLC, using the audiovisual MARC format. This study will determine if other academic health science libraries are using similar methods for organizing their artifact collections. In addition, the relationship between staff size and the cataloging of artifacts will be explored.

PROCEDURE

METHODOLOGY

The study consists of a survey sent to heads of cataloging in academic health science libraries. The sample was randomly drawn from the population of academic health science libraries in the United States. Institutions were identified from the *Directory of Graduate Medical Education Programs*, 1992-1993 edition, published by the American Medical Association. This type of library was chosen because of the tendency of medical school alumni to donate instruments, usually along with papers, manuscripts, and books, to libraries of this kind. In addition, the presence of a cataloging project involving health science libraries in the state of Ohio makes this a very timely study. The cataloging of three-dimensional artifacts in this type of library has never been studied. The resulting data will give other academic health science librarians, as well as librarians in other types of libraries, ideas on how to manage three-dimensional materials.

QUESTIONNAIRE DEVELOPMENT

The questionnaire consisted of sixteen multi-choice questions designed to determine the size and education of cataloging staff, the presence of three-dimensional medical artifacts, their storage, and whether they are cataloged. Specific questions focus on the use of bibliographic utilities for cataloging these objects, the cataloging code used, and whether the objects are used for educational purposes. Other questions examine descriptive elements included in the cataloging record and access points to the cataloged record. Space is provided for further comments and explanations. The questionnaire was pretested on the librarians presently involved with the OHMAC project (seven academic libraries in the state of Ohio). They have some experience with the principles involved in this type of cataloging, and extensive experience as catalogers. However, because the work of the project is being carried out in Cleveland by project catalogers, none of them have day-to-day experience with this type of cataloging. Therefore, it was felt that they were still objective enough to complete the questionnaire and provide feedback to uncover any problems. In addition, because of their personal interest in this type of cataloging, it

was thought that their participation and cooperation would be likely and that they would take the time to give carefully thought out, constructive feedback.

The revised instrument was then sent to a randomly selected group of thirty librarians who head cataloging departments of academic health science libraries throughout the United States. They were asked to return it within two weeks. A follow up letter and another copy of the survey was then sent.

Completed questionnaires were received from seventeen respondents, or approximately 57% of those to whom the survey was sent.

SIGNIFICANCE

As technology becomes more and more complex, librarians need to recognize that information can be obtained from a variety of sources. Three-Dimensional artifacts are unique primary sources of information. Librarians must not deny access to these sources by allowing them to be left uncataloged, discarding them, or even separating catalog records from those of other information sources. Historical medical artifacts in particular are sought after by historians interested in the history of technology, medicine, or social policy. This project will give librarians insight into what others are doing with these objects and ideas on providing access to their own collections. It will also serve as a tool for the development of continuing education programs for librarians to learn three-dimensional object cataloging and for library school students to learn the basics of nonbook cataloging. Finally, it may foster some interest in pursuing joint ventures between librarians and museum professionals to better meet the information needs of their patrons.

ANALYSIS OF DATA

The surveys were mailed during the third week of September, 1994. By October 10, 1994, the close of the survey period when analysis of the data began, 17 responses had been received, a 57% response rate. Of those responses, fifteen or 88% of the libraries reported that they did have three-dimensional medical artifacts in their collections, while two, (12%) reported that they did not collect three-dimensional medical objects.

Of those libraries that did report having three-dimensional medical artifacts in their collections, six (40%) of them do not catalog these items. Of the remaining nine, or 60% that do catalog these items, three or 33% use AACR2 as a basis of their cataloging, and six or 67% use local code or practice. Two (33%) of those who do not catalog said they would like to do so or intend to catalog these items in the future. The results of these responses are summarized in Table 1.

Table 1
Frequency of citation of various cataloging codes
as basis for cataloging three-dimensional medical artifacts
N=15

code	n	%
AACR2	3	20
local practice	6	40
other	0	0
do not catalog these objects	6	40

Most of those libraries that do report object collections, have very small collections. 18% had fewer than 100 items. Only 35% had more than 1000 items. Five respondents or 33% had between 100 and 500 items and two (13%) had between 501 and 1000 items. These responses are summarized in table 2.

Table 2
Size of medical artifact collections
N=15

size	n	%
less than 100 items	3	20
100 to 500 items	5	33
501 to 1000 items	2	13
more than 1000 items	5	33

The vast majority of three-dimensional items found in the collections of academic health science libraries are donated. Thirteen, or 87% of respondents indicated that they obtained items by donation. In contrast, only two institutions (14%) purchased three-dimensional objects. Because institutions could check all that apply, the totals add up to more than 100%.

Storage of three-dimensional materials was slightly more varied. The majority (fourteen or 93%) of responding institutions reported that their medical artifacts were stored in special collections. Three institutions (20%) kept at least some of these items in remote storage and four institutions (27%) stored these items with archival materials. Only one institution interspersed their object collections with books. Again, because respondents could choose more than one answer, the totals add up to more than 100%. The results of these responses are summarized in Table 3.

Table 3
Frequency of responses of storage locations for medical artifacts
N=15

storage location	n	%
remote storage	3	20
special collections	14	93
academic departments	0	0
interspersed with books	1	7
archives	4	27
other (museum in library)	1	7

As far as the details of cataloging are concerned, seven, or 88% of those who do catalog use controlled subject headings for access to the records. Four of them, (50%) used MeSH. The other 50% used locally devised subject headings. None reported using Library of Congress subject headings, an expected outcome when surveying medical libraries, most of whose collections are based on MeSH. In addition, the list of record elements offered in the questionnaire matched very closely those used by responding catalogers. All or nearly all used most of the elements, including name of manufacturer, place of manufacturer, dimensions, materials, and description. Only five of the institutions included color in the descriptive element and five checked *other*, identifying *other* as donor's name and/or date of use. The results of these responses are summarized in Table 4.

Table 4
Frequency of elements cited as included in the descriptive catalog record
N=9

record elements	n	%
name of manufacturer	8	89
place of manufacturer	8	89
dimensions	8	89
material	8	89
color	4	44
brief description	8	89
other (donor, dates of use)	4	44

Table 5
Frequency of elements cited to gain access to catalog record
N=9

record element	n	%
title or name	6	67
inventor or designer	3	33
manufacturer	4	44
subject or subjects	6	67
call number	3	33
barcode	3	33
other (accession number)	2	22

Elements of the catalog record used to gain access vary more widely than the descriptive elements. "Title or name" and/or "subject" were checked by six or 75% of those who catalog. Access by manufacturer is used by four or 50% of those who catalog and "inventor/designer" by three or 38% of those who catalog. These answers are summarized in Table 5. Four, or 50% of those who catalog use an online bibliographic utility for cataloging three-dimensional artifacts. All of these use OCLC.

The choice of name or title for catalog record varies among institutions. Again these numbers may total more than nine or 100% of the respondents because they could check more than one answer. Six of the nine institutions who did catalog (67%) chose each of the first three responses. These responses are provided by cataloger based on cataloger's experience or knowledge. identified in instrument manufacturer's sales catalogs, and identified in other reference source. Slightly less (three or 33%) depended on donor information for name or title. None of the institutions chose other.

The possibility of a correlation between the cataloging of three-dimensional medical artifacts and patron requests to use the instruments for research was indicated by the survey responses. Out of the eight institutions that do catalog these types of objects, five or 63% have had patron requests to use the objects in the collection. Only three of the institutions who cataloged (37%) had not had any requests by patrons to use their object collections. The majority of institutions that did not catalog their collections, however, did not have patron requests to use them. Only one institution (14%) had any requests by patrons, while six institutions, or 86% had no requests to use the collections. This data is summarized in table 6. A strong possibility of a correlation is apparent from the table. A chi-square performed on this data strongly indicates that this correlation is significant. The frequencies in the cells are small enough to call strict significance into question. However, the high degree of variance (and, therefore, significance) exhibited suggests a significant correlation. The results of the chi-square analysis are: chi-square=3.616; p level=.02.

Table 6
Relationship between cataloging of three-dimensional objects
and patron requests to use artifact collections

	catalog three-dimensional medical artifacts?			
	yes		no	
	n	%	n	%
patron request	5	63	1	14
no patron request	3	37	6	86

*statistically significant variance (Chi-square=3.616, p level=.02

The majority of the responding libraries 88% are fairly small, with six or less full time employees responsible for cataloging. In fact eight libraries (47%) have less than three full time catalogers on staff. None of the libraries had seven to nine catalogers, but two (12%) were large with ten or more catalogers. These results are displayed in table 7.

Table 7
Frequency of number of full time employees
responsible for cataloging

number of catalogers	n	%
less than 3	8	47
3-6	7	41
7-9*	0	0
10 or more	2	12

Finally, regression analysis was performed on data to see whether the cataloging of 3-D medical artifacts is related to the number of catalogers on the staff of the institution. The regression results show an unexpected relationship between staff size and the cataloging of these objects. To confirm these results, a regression was performed on the inverse relationship. In other words, a regression was done between staff size and whether a library does not catalog. The conclusion was the same: small libraries are *less* likely to *not* catalog. That is small libraries are more likely to catalog these objects than

large libraries. The R-squared calculation for this regression analysis (cataloging vs. staff size) was 0.8, which is good (unity being a perfect correlation).

SUMMARY AND CONCLUSIONS

A survey questionnaire was sent to 30 academic health science libraries to determine if they have three-dimensional medical artifacts in their collections, if and how they cataloged these materials, and if staff size is a factor in whether these objects were cataloged. Seventeen responses were received for a response rate of 57%. This response rate is less than ideal. It would be extremely helpful to know what caused the lack of response from the remaining thirteen institutions as well as to have their responses for statistical analysis. However, a response rate of 57% is not unacceptable, and seems to be in line with response rates that other researchers have experienced.

Because of the small data numbers, some of the statistics are not as significant as they would have been with larger numbers. Significant conclusions can still be drawn from the results, but a future study of perhaps the entire population of academic health science libraries would be warranted to verify the results of this study.

In response to the first research question proposed in this study, the majority (15 or 88%) of academic health science libraries do indeed have three-dimensional medical artifacts in their collections. This supports the premise that academic health science libraries do receive gifts of instruments from local physicians and alumni. All or nearly all of the institutions reported that they received such items through donation. Only two institutions reported purchasing such artifacts, indicating that these collections develop mostly by accident, rather than through active collecting. It is likely that the personality of the person in charge of these items, however, can radically effect the collection of such artifacts. Some directors may actively seek donations, while others may passively wait for donations to come to them.

The second research question this study sought to answer was whether institutions that have these objects in their collections catalog them. The study results do confirm that the majority of academic health sciences libraries, (60%), catalog these items to make them accessible to patrons. Of those who do not catalog these items, two (33%) wrote in the questionnaire margin that they would like to or have plans to start a cataloging project for these materials in the future. It is possible that other non-cataloging institutions would agree that they would like to catalog these items but time and/or budget constraints

prohibit them from doing so. Cataloging three-dimensional objects is extremely labor intensive as few records for copy cataloging are available, requiring original cataloging in almost all instances.

The third proposed research question dealt with the cataloging code institutions used to catalog these items. Twice as many libraries relied on local code or practice as the basis for cataloging these items as opposed to those who relied on AACR2. This may indicate that librarians still have not fully accepted the applicability of chapter 10 in AACR2 to three-dimensional artifacts. This question leads into the next research question. Do institutions used bibliographic utilities such as OCLC or RLIN to catalog these materials or do they create records for local use only. Only 50% of the institutions use OCLC for cataloging these materials. Again, this may be a result of the still fairly recent adaptation of the AV format for realia. It would be interesting to see if the percentages of libraries who rely on AACR2 and use OCLC for object cataloging increases as time goes on. None of the institutions reported using RLIN for object cataloging.

The fourth research question asked what descriptive elements and access points were included in the catalog records for three-dimensional objects. The survey responses indicated that a large percentage (88%) used controlled subject headings, with half of these using MeSH and half using locally devised headings. This response seemed quite high considering the difficulties that can be associated with trying to adapt MeSH, designed primarily for cataloging and indexing books and journal articles, to three-dimensional objects. Locally devised subject lists are time consuming to create. The large percentage of respondents that take the time for subject analysis of three-dimensional objects suggests that librarians feel that this is an important element of the descriptive catalog record.

All or nearly all of the institutions checked that they included name of manufacturer, place of manufacture, dimensions, materials, and a short descriptive note in their cataloging records. Only five institutions checked color as included in their records. The color of the object may not be seen as the distinguishing feature of these items,

especially since so many of them are made of metal. Other elements supplied by the institutions surveyed include donor name and the dates that the object was used.

Access points to the record are elements that patrons can use to search for an item or related items. Access points varied more widely than descriptive elements. Title or name was used as an access point by 67% of the institutions. Subject was also used by 67% of respondents. It seems strange that title or name was not used by all of the institution that cataloged records. The title is usually the most likely access point for any catalog record. It would be difficult to imagine an institution not providing access to their books and other more traditional library materials by their title. Manufacturer was used as an access point by 50% of the institutions and inventor or designer of the instrument by 38% of the respondents. Instrument designers are often difficult to verify as they did not usually include their name on the instrument. Their identification often requires some research that can be time consuming. Therefore, it is not surprising that fewer institutions included this as an entry to the catalog record. Overall, institutions that do catalog these items provide adequate access to them and fairly complete descriptions of the objects.

The final question regarding staff size and its possible correlation to object cataloging provided rather surprising results and requires some discussion. Due to the small amount of data, two possibilities exist for this surprising relationship. First, it is possible that there really is a good correlation. The alternative explanation is that the small amount of data by chance shows a good relationship between these two factors. Again, a larger study would be beneficial to confirm these results.

It is rather difficult to conjecture why smaller libraries would be more likely to catalog three-dimensional materials than larger libraries. They may be purchasing less materials and have less traditional cataloging to do, giving the staff more time to concentrate on the cataloging of other formats. It is also possible that the books and other materials that they purchase are more likely to have already been cataloged on one of the bibliographic utilities by the larger institutions. This would mean that much of their work is copy cataloging, freeing time for the original cataloging of three-dimensional artifacts.

Possibly the largest factor in the organization and cataloging of three-dimensional objects is support for these objects as research tools by the library director and the person

responsible for their care. If these objects are given the same value as books and other more traditional information sources, access will be provided to them and they will not be relegated to the basement storage area. Historians and other researchers are interested in these objects. It is the libraries' job to provide these people access to them.

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Appendix A

Re: Cataloging three-dimensional medical artifacts

June 23, 1994

Dear Librarian:

I am a graduate student in the School of Library and Information Science at Kent State University. As part of the requirements for my master's degree I am conducting a study about the cataloging of three-dimensional medical equipment in academic health sciences libraries. The enclosed questionnaire will help me to determine if libraries are collecting such materials and how they are making information on these items available to their patrons. This information will be helpful to librarians in many different types of libraries who find themselves responsible for object collections.

Confidentiality and anonymity are guaranteed as you do not need to sign your name or institution to individual questionnaires; only the investigator has access to the survey data. There is no penalty of any kind if you should choose to not participate in this study or if you would withdraw from participation at any time. While your cooperation is essential to the success of this study, it is, of course, voluntary. A copy of the final summarized results of the study will be available upon request.

If you have any questions, please contact me at (216) 291-4152 or Dr. Marcia Lei Zeng, my research advisor, at (216) 672-2782. If you have any further questions regarding research at Kent State University you may contact Dr. Eugene Wenninger, Office of Research and Sponsored Programs, at (216) 672-2851.

Thank you very much for your cooperation; it is much appreciated. You may return the questionnaire in the enclosed self-addressed stamped envelope to me at the following address. In order to complete the study in a timely manner, I would appreciate your returning the completed questionnaire within two weeks.

Jennifer Compton
3875 Kirkwood Rd.
Cleveland Heights, Ohio 44121

Sincerely,

Jennifer Compton
Graduate Student

Cataloging three-dimensional objects: A study of academic health science libraries

1. How many full time employees are responsible for cataloging at your institution? (Include all people involved full time in the cataloging process including original cataloging, copy cataloging, inputting of records, and processing of materials.)

less than 3 _____
3-6 _____
7-9 _____
10 or more _____

2. How many of your full-time employees, responsible for cataloging, have a Master's Degree in Library Science from an ALA accredited Library School?

less than 3 _____
3-6 _____
7-9 _____
10 or more _____

3. How many of your full time employees, responsible for cataloging, have a bachelor's degree from a four year college or University, but do not have a Master's Degree in Library Science?

less than 3 _____
3-6 _____
7-9 _____
10 or more _____

4. Does your library have three-dimensional medical instruments and/or equipment in its collection? Medical instruments and equipment includes any objects used by health care professionals for the diagnosis and treatment of medical conditions.

yes_____ no_____

If yes, please answer the following questions.

If no, you need not continue. Thank you for your participation in this study. Please use the envelope provided to return your questionnaire.

5. Approximately how many objects make up this collection of medical instruments or equipment?

less than 100 _____
100-500 _____
501-1000 _____
1001+ _____

6. How were most of the objects in this collection obtained?

donation of medical instruments only _____
donation with other library materials _____
purchase _____
loan from another institution _____
other _____ Please explain below.

7. Where are these items stored? Check all that apply.

remote storage _____
special collections _____
academic departments _____
interspersed with books _____
archives _____
other _____ Please explain below.

8. On what code do you base the cataloging of these objects?

AACR2 _____
local practice _____
do not catalog these objects _____ If you check this box, please skip to question 15.
other _____ Please explain below.

9. Do you use a controlled list of subject headings to provide access to the records for these objects?

yes _____
no _____

If no, skip to question 10.

If yes, what subject thesauri do you use?

Library of Congress Subject Headings _____
National Library of Medicine MeSH _____
Local subject controlled list _____
Other _____ Please explain below.

10. Which of the following elements are included in the descriptive catalog record for medical artifacts in your collection?

_____ name of the manufacturer of the object
_____ place of manufacture
_____ dimensions of the object
_____ types of materials of which object is constructed (metal, plastic, wood, etc.)
_____ color of object
_____ description note (a brief written description of the physical appearance of the object)
_____ other (please explain below)

11. Which of the following elements of the catalog record can be used to gain access to the catalog record?

_____ Title or name of object
_____ Person responsible for the invention or original design of the object
_____ Manufacturer
_____ Subject or subjects
_____ Call number
_____ Barcode
_____ Other (Please specify below)

12. How is a name or title of the object chosen for the catalog record?

_____ Provided by cataloger based on cataloger's experience or knowledge.
_____ Identified in instrument manufacturers' sales catalogs.
_____ Identified in other reference source
_____ Based on information given by donor
_____ Other (please specify below)

13. Are the records for these objects interfiled with those for other library materials or are they kept separately?

interfiled _____ kept separate _____ do not keep records _____

14. Do you use an online bibliographic utility to catalog these items?

yes _____
no _____

If yes, which online bibliographic utility do you use?

OCLC _____
RLIN _____
other _____ Please explain below.

15. Have you had any requests by patrons to use these instruments for research?

yes _____
no _____

If yes, what type of patron initiated the request?

student _____
faculty _____
medical instrument collector _____
other _____ Please explain below.

16. Are any of these objects used for display purposes?

in library _____
in medical school _____
in other areas of University _____
by outside institutions _____
no objects displayed _____

Thank you for your participation in this study. Please use the envelope provided to return your questionnaire as soon as possible.

Follow-up letter

Re: Cataloging three-dimensional medical artifacts

September 20, 1994

Dear Librarian:

Two weeks ago a questionnaire regarding your library's practices for cataloging three-dimensional medical artifacts was mailed to you. The questionnaire will help determine if academic health science libraries have such objects in their collections and how they make these items available to their patrons. This information will be helpful to librarians in many different types of libraries who are responsible for object collections.

If you have already returned your questionnaire, thank you for you participation. If you have not completed the questionnaire, please do so today. Because it has been sent to only a small representative sample of librarians in academic health science libraries, it is extremely important that your answers be included in the study if the results are to accurately represent academic health science library practices.

If, by some chance, you did not receive the questionnaire, if it got misplaced, or if you have any problems completing it, please call me at (216) 291-4152.

Completed questionnaires can be returned in the self-addressed stamped envelope provided and mailed to:
Jennifer Compton
3875 Kirkwood Rd.
Cleveland Heights, Ohio 44121

Sincerely,

Jennifer Compton